

HOMework 2

Due on: September 23 at 1:00pm (submit at the end or at the beginning of class).

Question 1.

- (a) Jane took a loan with annual interest rate of 4% compounded continuously. After 2 years, she paid the bank 8000\$ in order to return her loan. How much did she borrow?
- (b) What is the continuously compounded annual interest rate that is equivalent to a nominal interest of 7% compounded semiannually (i.e. twice a year)?

Question 2. Jane invests 7000\$ in a trust with an annual rate of 6% compounded continuously. She withdraws 4000\$ from the trust after 3 years in order to buy a car. How much money will the trust hold 5 years from the day Jane started the investment?

Question 3. Evaluate the following limits.

- (a) $\lim_{x \rightarrow -2} \frac{x^2+2x+3}{x^2+x+3}$
- (b) $\lim_{x \rightarrow -2} \frac{x^3+8}{x^2+x-2}$ (Hint: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$)
- (c) $\lim_{x \rightarrow 1} \frac{\sqrt{x^2+8}-3}{x-1}$